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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/524,617	02/08/2005	Christoph Glingener	2001P09973WOUS	1478
29177	7590	12/19/2008		
BELF., BOYD & LLOYD, LLP			EXAMINER	
P.O. BOX 1135			BELLO, AGUSTIN	
CHICAGO, IL 60690				
			ART UNIT	PAPER NUMBER
			2613	
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			12/19/2008	PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

### Office Action Summary

**Application No.**

10/524,617

**Applicant(s)**

GLINGENER, CHRISTOPH

**Examiner**

Agustin Bello

**Art Unit**

2613

**Period for Reply** -- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 01 October 2008.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 11, 14, 15, 17-20, 24 and 28-30 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 11, 14, 15, 17-20, 24 and 28-30 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB08)
- Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)
- Paper No(s)/Mail Date \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

**DETAILED ACTION**

***Claim Rejections - 35 USC § 103***

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 11, 14-15, 17-20, 24, and 28-30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yee (U.S. Patent No. 7,146,103) in view of Hui (U.S. Patent No. 6,999,688).

Regarding claim 11, Yee teaches a method for transmitting a first and a second data signal in polarization multiplex in an optical transmission system, comprising: modulating at the transmitting end the first data signal onto a first optical carrier signal (reference numeral 1660A in Figure 16) to generate a first sideband modulated signal; modulating at the transmitting end the second data signal onto a second optical carrier signal (reference numeral 1660B in Figure 16), which has the same optical carrier frequency or differs (i.e. 1669A differs from 1669B in Figure 16) by a differential frequency ( $\Delta f$ ) from the first carrier frequency such that the spectra of the first and the second sideband modulated signals overlap (inherent in that both spectra fit within the bandwidth of optical filter 1615), by which means the transmission bandwidth is reduced, to generate a second sideband modulated signal; orthogonally polarizing the first and the second sideband modulated signals to each other (as noted in Figure 16); combining the first and the second sideband modulated signals into the optical polarization multiplex signal (reference numeral 1614 in Figure 16); transmitting the optical polarization multiplex signal; feeding at the receiving end the transmitted optical polarization multiplex signal to a polarization

splitter (reference numeral 1633 in Figure 16) which separates the optical polarization multiplexed signal into the first and the second sideband modulated signals; converting the first sideband modulated signal to a first electrical signal (reference numeral 1630A in Figure 16) and/or converting the second sideband modulated signal to a second electrical signal; analyzing the first and/or the second electrical signal (reference numeral 180, 190 in Figure 1). Yee differs from the claimed invention in two manners.

First, although Yee teaches feeding at the receiving end the transmitted optical polarization multiplex signal to a polarization splitter, Yee differs from the claimed invention in that Yee fails to specifically teach doing so via a polarization control element. However, Yee teaches that the use of a polarization control element (reference numeral 139 in Figure 1) in a different embodiment than that relied upon for the rejections is well known in the art. Furthermore, Hui teaches that feeding at the receiving end the transmitted optical polarization signal via a polarization control element (reference numeral 406 in Figure 4) to a polarization splitter (reference numeral 408 in Figure 4) is well known in the art. One skilled in the art would have been motivated to employ this configuration in the apparatus of Yee in order to provide polarization alignment of the optical signal based on feedback links (column 2 lines 3-6 of Hui). Therefore, it would have been obvious to one skilled in the art at the time the invention was made to feed at the receiving end the transmitted optical polarization multiplex signal of Yee via a polarization control element to a polarization splitter as taught by Hui.

Second Yee differs from the claimed invention in that Yee fails to specifically teach that dependent on the analyzing result, deriving at least one control signal for the purpose of controlling the polarization control element. However, Hui teaches that this concept is well

known in the art (reference numeral 428 in Figure 4). One skilled in the art would have been motivated to analyze the result and derive at least one control signal for the purpose of controlling the polarization control element in order to indicate the two principal states of polarization (column 6 lines 1-5). Therefore, it would have been obvious to one skilled in the art at the time the invention was made to analyze the result and derive at least one control signal for the purpose of controlling the polarization control element.

Regarding claim 14, the combination of references and Yee in particular teaches the differential frequency ( $\Delta f$ ) is greater than one Gigahertz (column 24 lines 30-57), whereas the carrier frequency of an upper sideband modulated signal (reference numeral 1669A of signal 1690 in Figure 16) is lower than the carrier frequency of the lower sideband modulated signal (reference numeral 1669B of signal 1690 in Figure 16).

Regarding claim 15, the combination of references and Yee in particular teaches that the sideband modulation is a single sideband modulation (column 20 lines 18-20) or a vestigial sideband modulation.

Regarding claim 17, the combination of references teaches that for a second carrier signal which differs from the first carrier signal by a differential frequency ( $\Delta f$ ) the spectral component of the first and/or the second electrical signal at the receiver is determined at the differential frequency ( $\Delta f$ ) (inherent in the recovery of the signal in Yee) for controlling a polarization control element the second electrical signal (reference numeral 406, 428 in Figure 4 of Hui).

Regarding claim 18, the combination of references and Yee in particular teaches the amplitude of the first and/or the second electrical signal is controlled to a minimum at the differential frequency ( $\Delta f$ ) (inherent in the single sideband discussed throughout).

Regarding claims 19-20, the combination of references and Hui in particular teaches the that the first or second sideband modulated signal is delayed at the transmitting end for the purpose of decorrelation.(reference numeral 112 in Figure 1).

Regarding claim 24, the combination of references and Yee in particular teaches that for the purpose of distinguishing the first and second electrical signals, at least one pilot tone signal (reference numeral  $f_p$  in Figure 10) is superimposed at the transmitting end on the first and/or the second carrier signal or the sideband modulated signal.

Regarding claim 28 and 29, the combination of references differs from the claimed invention in that it fails to specifically teach that the purpose of distinguishing the first and second electrical signals the first and second data signals are transmitted at different bit transmission rates or data formats. However, the use of different bit rates or data formats is well known in the art and Official Notice is given to that effect. One skilled in the art would have been motivated to employ different data rates or different data formats in order to allow the identification of different data groups.

Regarding claim 30, Yee teaches that the optical transmission system is operating in wavelength multiplex mode (reference numeral 2700 in Figure 27).

***Response to Arguments***

3. Applicant's arguments filed 10/01/08 have been fully considered but they are not persuasive.

Applicant argues that the combination of references and Yee in particular fails to specifically teach that the spectra of the first and the second sideband modulated signals overlap.

However, the examiner disagrees and maintains that Yee implicitly and explicitly teaches these limitations.

Specifically, Yee's Figure 16 shows that the signal spectra 1660A and 1660B are combined to form combined spectrum 1680. Spectrum 1680 is clearly shown as single spectrum, indicating that spectrum 1660A intersects with spectrum 1660B at least partially. In other words, the end of spectrum 1660B touches the head of spectrum 1660A to form a combined spectrum 1680. As such, the examiner asserts that spectrum 1660A overlaps with spectrum 1660B since the spectra ends are apparently partially coincident in time. Furthermore, the bracketing of spectrum 1680 in Figure 16 also appears to show that the two spectra are at least partially overlapped. As applicant is surely aware, MPEP 2125 allows the figures of a reference to anticipate limitations of the claimed invention regardless of whether the feature shown is unintended or unexplained in the specification. Therefore, the examiner maintains that Yee inherently teaches that the overlapping spectra due to the fact that the spectra ends intersect, and due to the fact that Figure 16 shows that the spectra overlap.

Yee also implies that the first and second sideband modulated signals overlap via disclosure that the use of different polarizations prevents unwanted effects due to phenomena such as four-wave mixing and cross-phase modulation, effects which require the two spectra to overlap in some manner in order to be an issue.

As to applicant's contention that Figures 19 and 20B prove that the spectra of the polarized sideband signals do not overlap, the examiner notes that Figures 19 and 20B pertain to an entirely different embodiment than that used to reject the claimed invention. As noted by applicant in the response filed 06/03/08, it is improper to take random embodiments and use

what they teach individually as though the teachings are transferable to other embodiments. To be clear, at no time does the examiner rely on or cite Figures 19 and 20B as meeting the limitations of the claimed invention.

Finally, Yee makes it clear that other types of combined spectra are achievable in the invention, including a combined spectra wherein the first and the second sideband signals are interleaved (Figure 24D). Clearly, this type of interleaved spectra explicitly anticipates the limitations in question since the subbands of one spectrum are interwoven with the sidebands of the other spectrum.

#### ***Conclusion***

4. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Agustin Bello whose telephone number is (571) 272-3026. The examiner can normally be reached on M-F 8:30-6:00.



If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jason Chan can be reached on (571)272-3022. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

A handwritten signature in cursive script that reads "Agustin Bella".

Primary Examiner  
Art Unit 2613